

Directory Based Support for Function Shipping in a Multiprocessor System

ABSTRACT

5 A multiprocessor system includes a plurality of data processing nodes. Each node has a processor coupled to a system memory, a cache memory, and a cache directory. The cache directory contains cache coherency information for a predetermined range of system memory addresses. An interconnection enables the nodes to exchange messages. A node initiating a function shipping request identifies an intermediate destination directory based on a list of the
10 function's operands and sends a message indicating the function and its corresponding operands to the identified destination directory. The destination cache directory determines a target node based, at least in part, on its cache coherency status information to reduce memory access latency by selecting a target node where all or some of the operands are valid in the local cache memory. The destination directory then ships the function to the target node over the interconnection.